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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/578,029

04/27/2006

Jin-Hong Kim

AB-1884 US

8328

32605

7590

03/17/2008

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EXAMINER

ARENDT, PAISLEY L

ART UNIT

PAPER NUMBER

2881

MAIL DATE

DELIVERY MODE

03/17/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/578,029	<b>Applicant(s)</b> KIM ET AL.	
	<b>Examiner</b> PAISLEY L. ARENDT	<b>Art Unit</b> 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/27/2006</u> .   | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because of the following informalities:
  - a. Fig. 6 – “Small and Large *chanel* Diode” is believed to be intended as “Small and Large *channel* diode”.
  - b. Fig. 6 – Axes of the graph need labels. They are believed to be “I – V”.
  - c. Figs. 7 and 8 – “*Thr* second Pixel electrode” is believed to be intended as “*The* second pixel electrode”.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the

examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The disclosure is objected to because of the following informality:
  - a. Title – “Thin Film Diode Panel for Trans-*Reflectective* Liquid Crystal Display” is believed to be intended as “Thin Film Diode Panel for Trans-*Reflective* Liquid Crystal Display”.Appropriate correction is required.

### ***Claim Objections***

3. Claims 1, 3-6 and 8-9 are objected to because of the following informalities:
  - a. Claim 1, line 2 and claim 5, line 2 – “a insulating substrate” is believed to be intended as “*an* insulating substrate”.
  - b. Claim 1, line 3 – “a first and second gate lines” is believed to be intended as “first and second gate lines”.
  - c. Claim 3 – According to the specification and drawings, it is believed that claim 3 is intended to read as “...first and fourth MIM diodes permit a *smaller* current than the second and third MIM diodes...” or “*second and third* MIM diodes permit a larger current than the *first and fourth* MIM diodes...” for consistency.

- d. Claim 3 – “second and third MIM *diode*” is believed to be intended as “second and third MIM *diodes*”.
  - e. Claim 4 – “at least one of *the* Al and Ag” and “at least one of *the* ITO and IZO” is believed to be intended as “at least one of Al and Ag” and “at least one of ITO and IZO”.
  - f. Claim 5, lines 8 and 10 – “a first and second contact portions” and “a third and fourth contact portions” is believed to be intended as “first and second contact portions” and “third and fourth contact portions”.
  - g. Claim 5, lines 20 and 21 and claim 6, lines 1 and 3 – “*the* overlapping area” lacks antecedent basis and is believed to be intended as “*an* overlapping area”.
  - h. Claim 8 – Delete extra period (.) at the end of the sentence.
  - i. Claim 9 – “a first and second redundant gate lines” is believed to be intended as “first and second redundant gate lines”.
- Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Song (US 7184108 B2).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Song discloses a thin film diode panel (100, Figs. 1-2) comprising:

an insulating substrate (110);

first and second gate lines (121 and 122) formed on the insulating substrate;

a reflection electrode (190a or 190b) (\*see Note below) formed on the insulating substrate;

a transmission electrode (190a or 190b) (\*see Note below) formed on the insulating substrate;

a first MIM diode (R1; claims 1 and 3) formed on the insulating substrate and connecting the first gate line and the reflection electrode;

a second MIM diode (R2; claims 1 and 3) formed on the insulating substrate and connecting the second gate line and the reflection electrode;

a third MIM diode (R3; claims 2-3) formed on the insulating substrate and connecting the first gate line and the transmission electrode;

a fourth MIM diode (R4; claims 2-3) formed on the insulating substrate and connecting the second gate line and the transmission electrode (see also Figs. 1-2),

wherein at least one of the first to fourth MIM diodes has a substantially different current-voltage (I-V) characteristic from the others (col. 4, lines 6-22).

\*Note: A reflection electrode and reflective LCD device are disclosed in col. 3, lines 27-29. A transmission electrode and transmissive LCD device are disclosed in col. 3, lines 7-10 and col. 6, lines 15-17, where a transparent electrode and a backlight are discussed indicating a transmissive device.

Regarding claim 2, Song discloses the first and fourth MIM diodes having a substantially same I-V characteristic and the second and third MIM diodes having a substantially same I-V characteristic (claim 5; Song discloses the corresponding diodes having the same resistance, which is equivalent to the same I-V characteristic due to the relationship of  $V = IR$ ).

Regarding claim 3, Song discloses the first and fourth MIM diodes permitting a larger current than the second and third MIM diodes under a same driving voltage (col. 7, lines 4-28; again Song discloses a resistance and capacitance comparison, which directs to an equivalent current and voltage comparison).

Regarding claim 4, Song discloses the reflection electrode being made of a material including at least one of Al and Ag, and the transmission electrode being made of a material including at least one of ITO and IZO (col. 3, lines 6-29).

Regarding claim 5, Song discloses a thin film diode panel (100, Figs. 1-2) comprising:

- an insulating substrate (110);

- a first gate line (121) formed on the insulating substrate and including a first input electrode (123);

- a second gate line (122) formed on the insulating substrate and including a second input electrode (124);

- a reflection electrode (190a or 190b) formed on the insulating substrate including first and second contact portions (S1 and S2);

- a transmission electrode (190a or 190b) formed on the insulating substrate including third and fourth contact portions (S3 and S4);

- insulating layers (151 and 152) formed on the first input electrode and the first and third contact portions and on the second input electrode and the second and fourth contact portions;

- a first floating electrode (141) formed on the insulating layer and intersecting the first input electrode and the first and third contact portions; and

- a second floating electrode (142) formed on the insulating layer and intersecting the second input electrode and the second and fourth contact portions,

wherein an overlapping area of the first floating electrode and the first contact portion is substantially different from an overlapping area of the first floating electrode and the third contact portion (Fig. 1 and col. 3, line 30 – col. 4, line 5).

Regarding claim 6, Song discloses an overlapping area of the second floating electrode and the second contact portion being substantially different from an overlapping area of the second floating electrode and the fourth contact portion (Fig. 1 and col. 3, line 45 – col. 4, line 5).

Regarding claim 7, Song discloses the overlapping area of the first floating electrode and the first contact portion being substantially the same as the overlapping area of the second floating electrode and the fourth contact portion (Fig. 1 and col. 3, line 45 – col. 4, line 5).

Regarding claim 8, Song discloses the overlapping area of the first floating electrode and the first contact portion being substantially narrower than the overlapping area of the first floating electrode and the third contact portion (Fig. 1 and col. 3, line 45 – col. 4, line 5).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Song (US 7184108 B2) as applied to claim 5 above, and further in view of Shin et al. (US 20070040956 A1).

Regarding claim 9, Song fails to explicitly disclose first and second redundant gate lines respectively formed on the first and second gate lines. However, Shin discloses a thin film diode panel which comprises first and second redundant gate lines (141 and 142, Fig. 2) respectively formed on first and second gate lines (121 and 122, Fig. 2). It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to incorporate redundant gate lines as in Shin into the invention of Song to decrease the possibility of line defects (para. [0060]).

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The references to Mizobata, Takemura, den Boer, Ishimoto and Sekiguchi all show various arrangements of thin film diode panels and/or MIMs with different current-voltage characteristics and/or different overlapping electrode portions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAISLEY L. ARENDT whose telephone number is (571) 270-5023. The examiner can normally be reached on MON - FRI, 8:30 a.m. - 6:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PLA

/ROBERT KIM/  
Supervisory Patent Examiner, Art Unit 2881